

A CMOS Bandpass Filter For Low-IF Bluetooth Receivers

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**Circuits and Systems I: Regular Papers, IEEE Transactions on [Circuits and
Systems I: Fundamental Theory and Applications, IEEE Transactions
on]; Publication Date: Aug. 2006; Vol: 53, Issue: 8**

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Summary

A CMOS fully integrated 12th-order bandpass filter for low intermediate frequency Bluetooth receivers is presented. The design is optimized to meet the selectivity and dynamic range requirements of Bluetooth while consuming relatively low power. The filter is based on unity gain cells and utilizes linearized MOSFET resistors for tuning. It exhibits a bandwidth of 1 MHz and a programmable center frequency range of 2 to 4 MHz. Experimental results obtained from a standard 0.5- μm CMOS chip show that the filter exhibits an in-band dynamic range of 53.3 dB at gain of 0 dB, and 52 dB at gain of 15 dB, while consuming a total current of 1.32 mA. Attenuations of more than 10, 38, and 55 dB, are achieved for blockers one, two, and three, respectively.

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